Texas Cooperative Extension

Economics of Dust Suppression in Feedyards

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Funding for this study was provided through the federal Air Quality Initiative

BACKGROUND:

The goal of cattle feedlots in the Texas Panhandle is to be economically viable at the same time as being socially and environmentally responsible. One adversity affecting feedyard neighbors and cattle health alike, is dust produced from the open-lot feedyard itself. Dust suppression in feedyards can be accomplished by moistening pen surfaces using a sprinkler system such as the traveling gun. According to Lorimor (2003), the optimum moisture level in an open-lot feedyard is 25 to 40 percent. At approximately 40 percent moisture, odor and flies becomes a problem. Dust can be the significant negative health issue at less than 25 percent moisture, Figure 1.

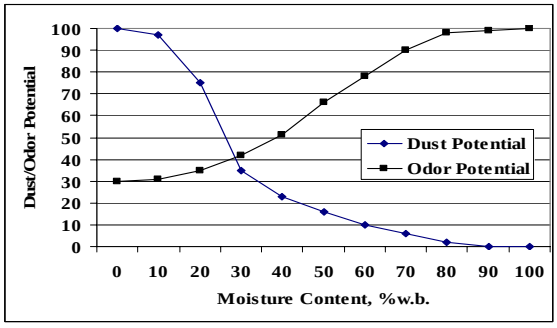

Figure 1. Source: Open Feedlot Construction and Management for Water and Air Quality Protection.

OBJECTIVE:

Conduct an economic analysis to determine the capital investment and operating costs associated with traveling gun(s) sprinkler system to control dust.

RESULTS:

The initial investment cost for a traveling gun sprinkler system to control dust emissions in a 10,000-, 30,000- and 50,000-head feedyard were estimated to be $45,292, $96,306 and $150,763, respectively. Subsequently, projected annualized total fixed and operational costs are combined and are $1.67, $1.38 and $1.36 per head for the three sized yards, Table 1.

In 2003, USDA Natural Resources Conservation Service made Environmental Quality Incentive Program (EQIP) funds eligible for Concentrated Animal Feeding Operations to address environmental issues such as feedyard dust suppression. However, no operations in the Texas Panhandle have applied for EQIP funds to utilize traveling guns. Traveling gun(s) sprinkler systems are not expected to be eligible for EQIP funding in the future (Sokora, 2006).

One advantage of this traveling gun system is lower initial investment compared to solid-set sprinklers and water trucks. However, adoption of the traveling gun(s) sprinkler system is likely limited due to the increased management, labor and maintenance requirements of the system relative to the other dust suppression systems.

Traveling gun.

Table 1. Fixed, Operational and Total Costs ($/Head-Capacity) for 10,000-, 30,000- and 50,000-Head Feedyards.

Head Capacity	Annualized Fixed Cost $/Hd-Capacity	Operational Cost $/Hd-Capacity	Total Cost $/Hd-Capacity
10,000	$0.62	$1.05	$1.67
30,000	$0.44	$0.94	$1.38
50,000	$0.41	$0.95	$1.36

Lorimor, J. 2003. "Open Feedlot Construction and Management for Water and Air Quality Protection." Retrieved on June 30, 2007 from: http://www.cals.ncsu.edu/waste_mgt/natlcenter/modules/Module%208.doc.

Sorkora, Gregory L. 2006. Personal communication. Zone Engineer, Natural Resource Conservation Service. Lubbock, Texas. July 14.

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